Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A method of measuring a distribution function for determining a signal quality in optical transmission systems, comprising the steps of:

sampling an optical binary signal in a working channel with a first threshold value, producing first sampling values;

additionally sampling said optical binary signal in a measuring channel with a second threshold value during a plurality of measuring intervals in which in each case said second threshold value is varied, producing second sampling values;

comparing respective said first sampling values with said second sampling values, producing comparison values;

integrating or summating said comparison values to produce, for each measuring interval, a summated comparison value;

storing said summated comparison values;

determining a distribution function of said comparison values as a function of said second variable threshold value after an adequate number of said measuring intervals; and

improving said signal quality or optimizing said optical transmission system utilizing said distribution function.

Claim 2 (previously presented): A method of measuring a distribution function for determining a signal quality in optical transmission systems, comprising the steps of:

sampling an optical binary signal in a working channel with a first threshold value, producing first sampling values;

additionally sampling said optical binary signal in a measuring channel with a second threshold value during a plurality of measuring intervals in which in each case said second threshold value is varied, producing second sampling values;

additionally sampling said optical binary signal in a measuring channel with a second threshold value during a plurality of measuring intervals in which in each case said second threshold value is varied, producing second sampling values;

determining, for each said measuring interval, a first summated value in said measuring channel by integrating sampled logical zeros or ones;

storing said first summated values;

determining, for each measuring interval, a number of bits received as a summated bit value;

storing said summated bit values;

determining a probability function, after an adequate number of said measuring intervals, as a function of said variable second threshold value for an occurrence of a binary state from said stored first summated values and associated said summated bit values; and

improving said signal quality or optimizing said optical transmission system utilizing said distribution function.

Claim 3 (previously presented): A method of measuring a distribution function for determining a signal quality in optical transmission systems, comprising the steps of:

sampling an optical binary signal in a working channel with a first threshold value, producing first sampling values;

additionally sampling said optical binary signal in a measuring channel with a second threshold value during a plurality of measuring intervals in which in each case said second threshold value is varied, producing second sampling values;

determining, for each said measuring interval, a first summated value in said measuring channel by integrating sampled logical zeros or ones;

storing said first summated values;

determining, for each measuring interval, a second summated value in said working channel by integrating received zeros or ones;

storing said second summated values;

determining a probability function, after an adequate number of said measuring intervals, as a function of said variable second threshold value for an occurrence of a binary state from said stored first summated values and associated said second summated values; and

improving said signal quality or optimizing said optical transmission system utilizing said distribution function.

Claim 4 (previously presented): The method as claimed in claim 3, further comprising the steps of:

forming, after each measuring interval, a difference value between said first summated value determined in said measuring channel, and said second summated value determined in the working channel;

storing said difference values for said measuring intervals; and

determining, from said difference values, a probability function for and occurrence of logical sampled values.

Claim 5 (previously presented): The method as claimed in claim 4, further comprising the step of:

determining a probability distribution for an occurrence of logical sampled values that considers said second summated values in the working channel or said summated value of the bits respectively assessed during a measuring interval.

Claim 6 (previously presented): The method as claimed in claim 1, wherein measuring intervals of different lengths are used.

Claim 7(previously presented): The method as claimed in claim 1, wherein said sampling is synchronous.

Claim 8 (previously presented): The method as claimed in claim 1, wherein said sampling takes place in parallel in a plurality of measuring channels with different threshold values.

Claim 9(previously presented): The method as claimed in claim 8, wherein said sampling takes place in parallel in a plurality of measuring channels with different threshold values during only one measuring interval.

Claim 10(previously presented): The method as claimed in claim 1, further comprising the step of changing a sampling instant in the measuring channel after each measuring interval.

Claim 11 (previously presented): The method as claimed in claim 1, further comprising the steps of:

measuring probability distributions with differently set dispersion values; storing measurement results; and

obtaining, from said stored measurement results, an at least approximately optimum value for dispersion compensation.

Claim 12 (previously presented): The method as claimed in claim 1, further comprising the steps of:

determining a probability density distribution; and

deriving criteria for an assessment or optimization of signal quality are derived from said probability density distribution.

Claim 13 (canceled).

Claim 14 (previously presented): The method as claimed in claim 2, wherein measuring intervals of different lengths are used.

Claim 15 (previously presented): The method as claimed in claim 3, wherein measuring intervals of different lengths are used.

Claim 16(previously presented): The method as claimed in claim 2, wherein said sampling is synchronous.

Claim 17 (previously presented): The method as claimed in claim 3, wherein said sampling is synchronous.

Claim 18 (previously presented): The method as claimed in claim 2, wherein said sampling takes place in parallel in a plurality of measuring channels with different threshold values.

Claim 19 (previously presented): The method as claimed in claim 3, wherein said sampling takes place in parallel in a plurality of measuring channels with different threshold values.

Claim 20 (previously presented): The method as claimed in claim 18, wherein said sampling takes place in parallel in a plurality of measuring channels with different threshold values during only one measuring interval.

Claim 21(previously presented): The method as claimed in claim 19, wherein said sampling takes place in parallel in a plurality of measuring channels with different threshold values during only one measuring interval.

Claim 22 (previously presented): The method as claimed in claim 2, further comprising the step of changing a sampling instant in the measuring channel after each measuring interval.

Claim 23 (previously presented): The method as claimed in claim 3, further comprising the step of changing a sampling instant in the measuring channel after each measuring interval.

Claim 24 (previously presented): The method as claimed in claim 2, further comprising the steps of: measuring probability distributions with differently set dispersion values; storing measurement results; and

obtaining, from said stored measurement results, an at least approximately optimum value for dispersion compensation.

Claim 25 (previously presented): The method as claimed in claim 3, further comprising the steps of: measuring probability distributions with differently set dispersion values; storing measurement results; and

obtaining, from said stored measurement results, an at least approximately optimum value for dispersion compensation.

Claim 26 (previously presented): The method as claimed in claim 2, further comprising the steps of: determining a probability density distribution; and

deriving criteria for an assessment or optimization of signal quality are derived from said probability density distribution.

Claim 27 (previously presented): The method as claimed in claim 3, further comprising the steps of:

determining a probability density distribution; and

deriving criteria for an assessment or optimization of signal quality are derived from said probability density distribution.